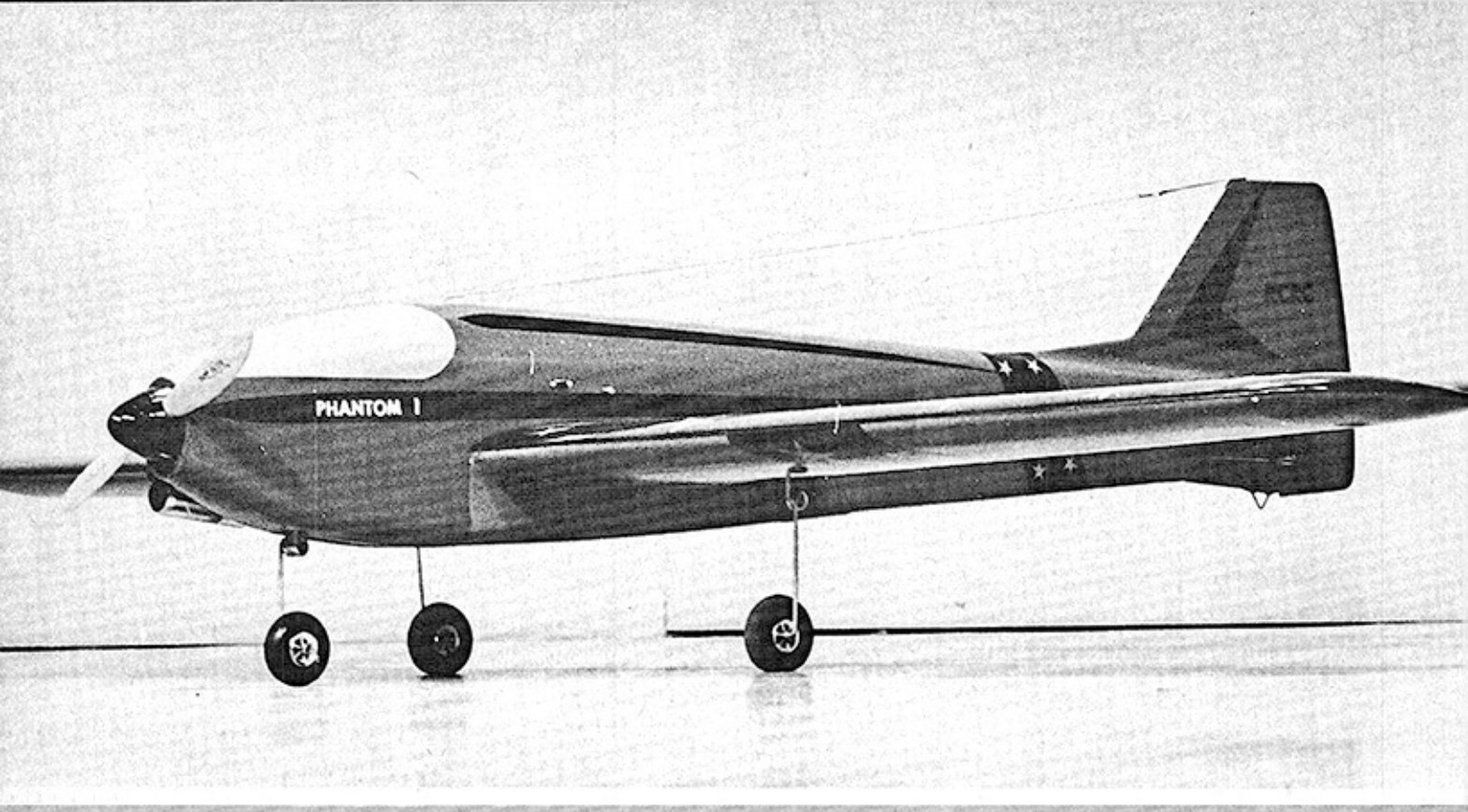

PHANTOM I

Bob Klineyoung's high performance pattern ship is for the flier looking for that extra margin in competition. Photos by Rick Friend.

Pattern flying today has developed into a kind of "Poetry in the Sky" with the advent of today's competent radios, retract gears, powerful engines such as the Webra .61, Lee Veco .61, S.T. Bluehead, etc. Also, pattern flying is fast developing into a more competitive, polished, and refined "State of the Art."

Since I started serious competition flying some three years ago, and enjoyed some reasonable success in the winner's circle flying various Kwik Fli's, New Orleanian, etc., I started looking for something different. The Phantom I is the result of many hours of "Hangar Flying" discussions over pattern aircraft design. With my good friend and fellow R/C club member, Dubby McGuire, I started to form a mental picture of the plane I wanted to design. After transferring those ideas to lines on paper, I became even more enthused about building it. The wing templates were computer-plotted by another fellow club member, Gary Martin, who has access to one of these electronic wonders.

The prototype flew "right off the board," so to speak, with only minor trim adjustments. The first flight was made under fairly heavy wind conditions, but the Phantom I grooved through the FAI Pattern like a bullet. With its Webra .61, and Silence-Aire muffler, Pro-line radio and retracts, it is extremely fast and clean. Landing characteristics were even better than I hoped for, as you can literally "walk it" right to the inner circle.

CONSTRUCTION

Fuselage: Cut the sides from medium 1/8" x 5" x 48" sheet balsa and then add the 1/32" plywood doubler. I use epoxy to laminate the doublers and sides to insure maximum fuselage strength. Add the ¼" square fuselage stringers and ½" triangular soft balsa stock to the fuselage sides. At this point, use the sheeted stab outline from the plans, and proceed to cut the stab openings from both fuselage sides. Now proceed to lay the plans on a flat and level table, and cover them with wax paper in order . . . **continued on page 91**


PHANTOM 1
PRO LINE

PHANTOM I

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that your adhesives will not stick to the plans. Next, cut out fuselage formers 1 through 7. Now plot the wing centerline directly on both the fuselage sides, using a red fine tip, Magic Marker type pen and, using the wing root template, draw this on both fuselage sides in its respective location. Now, draw the belly pan separation lines, both front and rear on the fuselage sides. The fuselage and belly pan are built as an integral unit and, after the fuselage is sanded to its final configuration, cut the belly pan from the fuselage on the scribed separation lines using a sharp X-Acto knife. Add Rocket City wing seating tape to the fuselage wing saddle and, after the wing has been joined, sheeted, and the center section covered with Celastic, bolt the wing in its proper location, then epoxy and fillet the belly pan in place. You should have perfect alignment.

Now, back to the fuselage construction. Invert the fuselage sides and place them over the top view of the fuselage plans to insure proper alignment. Epoxy formers F2, F3 and F5 in place. After they are completely dry, Titebond the remaining formers in place - - - except F1 - - - and glue the rear fuselage ends together. Now, to epoxy F1 in place, I use two 1" x 1" x 12" pine blocks to bracket the front sides of the fuselage then, wrapping each end with heavy nylon string, and inserting a screwdriver through the string at each end, simply twist the screwdriver until the fuselage sides are pulled together at the end. Finally, epoxy former F1 in place.

After F1 has dried, glue the bulkhead reinforcements in place, along with the tank floor and belly pan front former. The latter is a repetition of the bottom half of former F3 which is made out of 3/16" balsa and not hollowed out as you did with F3. Now, locate your particular engine on the Tatone mount and locate the mount position on former F2. Drill F2 and install 6-32 blind nuts, setting your engine and mount for 0-0 thrust. I cut a ½" diameter hole on the tank center line, through former F2 and the Tatone mount to exit the fuel lines. Now, proceed with the 1/8" bottom sheeting, bottom blocks, and all necessary front engine compartment fill blocks. Add the top fuselage formers, 3/8" top sheeting, and front dummy canopy block, hollowed as shown on plans to receive the battery pack. Sand the entire fuselage to shape. Add the ¼" balsa vertical fin. After silking, or using the finishing technique that you prefer, complete and finish the fuselage.

Wing: Cut foam cores from 1 pound density foam. The wings are symmetrical. Add the ½" x 3/8" balsa edge stock to the cores, then the short piece of 1¼" trailing edge stock that holds the Rocket City aileron horns in place. Where the horn rod exits at each end of the short brass tube, I put some heavy axle grease and, when the whole thing is epoxied in place, the horns are popped free for an unrestricted movement. Next, cover the wing cores. I used 1/16" balsa sheets that were then silk covered. Add the balsa block tips, and now you are ready to join the wing halves - - - again refer to the plans for the proper dihedral angle.

Horizontal Stabilizer: Cut the Stabilizer cores from the same foam as you used for the wing. Cover with 1/16" balsa and add the tips and elevator. Be sure to silk these items.

Vertical Fin and Rudder: Both were made from ¼" balsa and silked. Make a small notch at the rear of the stabilizer cutout on the fuselage, and slide the completed horizontal stabilizer in place. Epoxy and fillet with Epoxolite, making sure the stab is aligned 0-0.

Finishing: Here again, it's any mans choice, but I just can't seem to break away from the old standard dope and talcum powder method. Over the years I have used just about every type of finishing technique there is but, for all-around strength, beauty, and weight, I like Aero-Gloss dope. The entire plane was given about 5 coats of 50-50 dope and talc mixture, sanded between coats, and then the final color was sprayed on. Over a base coat of Aero-Gloss silver, the primary color was Aero-Gloss Fokker Red with Black trim. The Gold Stars were cut from regular MonoKote. When everything was installed, I put her on the scales and she topped out at 7½ pounds which I believe is well within the weight range of present day pattern aircraft, utilizing retractable landing gear.

Trim: As quoted by a good friend of mine, here's the part that separates the winners from the losers. "You can build the airplane perfectly, but unless you take the time to properly trim it, it will fly **you** instead of you flying it." First of all, make sure the engine, wing, and stabilizer are set at 0-0 thrust – don't eyeball this, measure it. Next, check the C.G. location as marked on the plans. Next comes the lateral balance. I check this by first removing the spinner, nut and prop, then turning the engine to its low compression stroke, place a Coke bottle under the engine shaft, and another one under the rear tail skid. If either wing tip drops, add any necessary weight to the wing tip until the wings are level.

At this point you're ready to fly and, as mentioned before, patience now becomes a factor and you should be prepared to spend a whole weekend, if necessary, to trim fly the airplane. I usually try to thoroughly trim and fly my airplanes a **month** of weekend flying, before I enter it in competition.

Well, that's the story behind the Phantom I, fellows – I hope you like it and will decide to build it. Of course, I'm partial, but I think it's the plane to watch in the coming contest seasons.

Good luck and happy flying! □